

Appl No.: 10/606,551

Atty. Dkt.: UCF-365

**Amendment to the Claims:**

This listing of the claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

Claim 1 (Currently amended). A method of forming visible light sources with up conversion materials, comprising the steps of:

generating near infrared light from a source;

upconverting the near infrared light through a an encapsulated mixture of upconversion materials located in a sample holder having a reflective surface into a visible light emission dependant on the type of upconversion material used, wherein the near infrared light is upconverted to the visible light emission;

reflecting the visible light cmission off the reflcctive surface; and

applying the reflected visible light emission to a light fixture for at least one of a general lighting source or a decorative lighting source.

Claim 2 (Original). The method of claim 1, whercin the gcnerated near infrared light is emitted from a diode laser.

Claim 3 (Original). The method of claim 2, wherein the diode laser includes an approximately 970 to approximately 980 nm diode laser source.

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**Claim 4 (Original).** The method of claim 1, wherein the upconversion materials are encapsulated in p-PMMA.

**Claim 5 (Original).** The method of claim 1, wherein the visible light emission includes: red light.

**Claim 6 (Original).** The method of claim 1, wherein the visible light emission includes: green light.

**Claim 7 (Original).** The method of claim 1, wherein the visible light emission includes: blue light.

**Claim 8 (Original).** The method of claim 1, wherein the visible light emission includes: white light.

**Claim 9 (Original).** The method of claim 1, wherein the mixture of upconversion materials includes:

yttrium fluoride (YF<sub>3</sub>) doped with ytterbium (Yb) and erbium (Er).

**Claim 10 (Original).** The method of claim 1, wherein the mixture of upconversion materials yields emissions with peaks at approximately 540nm and approximately 660nm.

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Claim 11 (Original). The method of claim 1, wherein the mixture of upconversion materials includes: rare-earth material.

Claim 12 (Original). The method of claim 1, wherein the mixture of upconversion materials includes:

ytterbium-erbium.

Claim 13 (Original). The method of claim 1, wherein the mixture of upconversion materials includes:

ytterbium-thulium.

Claims 14-18 (Cancelled).

Claim 19 (Currently amended). A method of forming visible light using upconversion comprising the steps:

providing near-infrared light; and

upconverting the near-infrared light with a rare-earth-doped crystalline host as upconversion particles to produce a visible light; and

reflecting the visible light from a reflector onto a lens, wherein a shape of the lens focuses the reflected visible light in a beam angle; and

applying the reflected visible light to a light fixture as a general lighting source or decorative lighting source, wherein the near infrared light is upconverted to the visible light emission.

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**Claim 20 (Previously presented).** The method of claim 19, wherein the visible light includes: visible red light.

**Claim 21 (Previously presented).** The method of claim 19, wherein the visible light includes: visible green light.

**Claim 22 (Previously presented).** The method of claim 19, wherein the visible light includes: visible blue light.

**Claim 23 (Previously presented).** The method of claim 19, wherein the visible light includes: visible white light.

**Claim 24 (Original).** The method of claim 19, wherein the rare earth doped crystalline host includes: NaYF<sub>4</sub> doped with Er and Yb.

**Claim 25 (Original).** The method of claim 19, wherein the rare earth doped crystalline host includes: YF<sub>3</sub> doped with Er and Yb.

**Claim 26 (Original).** The method of claim 19, wherein the rare earth doped crystalline host includes: YLiF<sub>4</sub> doped with Tm and Yb.

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Claim 27 (Original). The method of claim 19, whercin the rare earth doped crystalline host includes: YF<sub>3</sub> doped with Tm and Yb.

Claim 28 (Previously presented). An upconversion visible light source for general and decorative lighting, comprising:

means for generating near infrared light from a source;  
upconversion materials for upconverting the near infrared light into a visible light emission;  
a reflector for reflecting the visible light emission; and  
a means for focusing the visible light emission into a light fixture as at least one of a general lighting source or a decorative lighting source.

Claim 29 (Original). The upconversion visible light source of claim 28, whcrein the generating means includes: a laser diode.

Claim 30 (Original). The upconversion visible light source of claim 28, whercin the upconversion materials include: rare earth doped crystalline host particles mixed within encapsulation materials.

Claim 31 (Original). The upconversion visible light source of claim 30, whcrcin the visible light emission includes: visible white light.

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Claim 32 (Original). The upconversion visible light source of claim 30, wherein the visible light emission includes: visible red light.

Claim 33 (Original). The upconversion visible light source of claim 30, wherein the visible light emission includes: visible green light.

Claim 34 (Original). The upconversion visible light source of claim 30, wherein the visible light emission includes: visible blue light.

Claims 35-38 (Canceled).